THE ETIOLOGY

OF

CHRONIC HERNIA,

WITH

SPECIAL REFERENCE TO THE OPERATION

FOR RADICAL CURE.

BY

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Reprinted from "THE LANCET," February 10, 1894.

(With Additional Tables.)

CHARLES GOOD & CO
PRINTERS,
11, BURLEIGH STREET, STRAND, W.C.

THE ETIOLOGY OF CHRONIC HERNIA, WITH SPECIAL REFERENCE TO THE OPERATION FOR RADICAL CURE.

THAT the operation for the radical cure of hernia is not in an ideal position will, I suppose, be admitted by all surgeons; the great majority of the profession do not look upon it with favour, being extremely doubtful of its permanent success, and their opinion is focussed in the statements of many of the leading authorities. Thus, Dr. William White of Pennsylvania, commenting on Richelot's results, says: "The general experience of surgeons everywhere is that at least from 40 to 50 per cent. of cases operated upon for the radical cure suffer from relapses."[1] Dr. Wyeth says: "I am averse to the operation for radical cure, except where strangulation has occurred or the intestine has become incarcerated, or the hernia has become so large that it interferes with the usefulness of the individual. I have never advised an operation except in such conditions, and never will until I see better results in efforts at radical cure."[2] Dr. Bull, in summing up a paper of his on the results of operations for this purpose, says: "The figures I bring forward are in evidence of the inefficiency of all operations for radical cure."[3] English surgeons hold much the same opinion. Birkett, in "Holmes' System of Surgery,"[4] in an article entitled "On the So-called Radical Cure," quotes with approval the words of Lawrence: "The operation affords no greater prospect of entire recovery than he [the patient] had without it, for after he has undergone an operation at the hazard of life the complaint may return, and the only protection against relapse is to wear a truss." Erichsen says in his "System of Surgery"[5] that "the only plan that is at the same time perfectly safe and

[1] New York Medical Journal, 1891, vol. li., p. 630.
[2] International Journal of the Medical Sciences, 1892, vol. liv., p. 356.
[3] New York Medical Journal, 1891, vol. liii., p. 630.
[4] Third edition, vol. ii., p. 763.
[5] Seventh edition, vol. xi., p. 618.

permanently successful is the compression of a well-made truss." Dr. Mitchell Banks[6] considers that the term "a radical cure" is a misleading one, and the main reason is that "a man who gets a rupture has naturally a weak and yielding canal or ring, and when you have patched him you can only put him in the same position he was in before the rupture, because he will still be a man with a weak condition of his abdominal wall." Such pronouncements might be multiplied almost indefinitely, but it is needless to do so. Generally, it may be said, despite the personal enthusiasm of certain operators, that the great majority of the profession look upon the idea of a radical cure of hernia as something which may now and then happen, with great good fortune, but as certainly not a thing to be depended upon. There must be a reason for this state of things, and the surgeon of to-day can hardly be expected to accept such a position as final. So many things which were formerly looked upon as hopeless have been found to be practicable under new conditions and with new technique that we cannot but be hopeful that this difficulty, too, will be found soluble. Under similar circumstances, by going carefully over the factors which go to make up our conception of the condition requiring remedy some error has occasionally been detected in the primary ideas, some fault in the line of reasoning, or, finally, some trivial mistake in the technique, the discovery and correction of which have been followed by success ; and the present communication is intended as an attempt towards so desirable a result. Practically in what is to follow congenital hernia will be excluded: first, because proper attention to the use of well-fitting trusses in early life will render any consideration of operative measures in the great majority of cases unnecessary ; and, secondly, because the great difficulty in operations for the radical oure of hernia is most intimately connected with acquired and not with congenital hernia. I am anxious also to be understood as dealing, not with rare or curious—often described as "interesting"—cases, but as discussing the cases met with every day, the great majority of common, ordinary herniæ.

It will, perhaps, be well first to formulate what is generally taken for granted—viz., the prevailing ideas as to hernia ; and the following, I believe, may be taken as postulates. (1) That hernia is a protrusion of viscera from their normal plane through the walls which ordinarily contain them ; (2) that

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[6] Brit. Med. Jour., 1887, vol. iv., p. 1261.

viscera which are normal, contained within walls of normal strength, do not protrude; (3) that if viscera protrude such a condition is due to (*a*) an inordinate length of their attachments (the mesentery), (*b*) an abnormal attachment of the mesentery to the back of the abdomen (Mr. Lockwood), (*c*) constitutional weakness of the walls and abnormal patulousness of the normal orifices (Dr. Mitchell Banks), and (*d*) effects of injuries, operations, sudden strains in lifting, &c.; (4) that reducible, incarcerated, obstructed, and strangulated herniæ are all varieties of the same condition; and (5) that the results of operation for radical cure upon all varieties should influence our prognosis as to the prospects of any one (this, when baldly stated, will probably not be admitted, but it is practically acted upon). Of these postulates I would draw more particular attention to the fourth—viz., that reducible, incarcerated, irreducible, obstructed and strangulated herniæ are all varieties of the same condition, varying only in the pathological appearances, the acuteness of their symptoms, and the urgency with which they require surgical intervention. Is this true? Leaving congenital hernia out of the question I suggest that all other cases of hernia are naturally divisible into two distinct classes, which have little or nothing in common—acute or strangulated and chronic or reducible herniæ, and that these are distinct in causation, pathology, and course, and that their treatment and the results of their treatment should also be considered apart. Under chronic herniæ I would include incarcerated and obstructed herniæ, as these terms merely emphasise certain incidents or modifications in the life history of chronic hernia.

Causation of hernia.—The distinct exciting causes of acute hernia are doubtless those usually given—viz., strains, sudden exertions, such as lifting &c.; but these can never, as I hope to show later, produce a chronic hernia, the actual efficient causes of which have certain peculiarities. *They are comparatively gentle, they act continuously or frequently, with short intervals, and from within; they are more or less habitual, so that they are often lost sight of, and they are usually removable or preventable.* One might say that the causes of acute hernia act rapidly, forcibly, desperately; those of chronic hernia slowly, gently, and with malice aforethought. In legal language the one is "manslaughter," the other "murder." The one is unavoidable but happens seldom, the other curable or avoidable, but happens frequently. The

curability or avoidability of the cause is important, inasmuch as it follows naturally that the results of a cause which has ceased to act can with much more certainty be removed than those of a force which is still in operation.

Pathological appearances.—The pathological appearances will be referred to again. They may here be simply mentioned. The peritoneal sac in chronic hernia is slowly produced and is never tightly distended ; it lies in folds at the point of exit from the abdomen. These folds radiate outwards and upwards over the parietes and tend to unite when once the efficient cause is removed, so as to form a collar at the level of the rings. The sac usually becomes thicker as time goes on, being sometimes ossified or otherwise changed, but always in the direction of hypertrophy. In acute hernia it is thin, tightly distended, and possesses no folds.

Course of the malady and pathological specimens.—Chronic hernia is essentially a very slow process from beginning to end. It has three stages : (1) a stage which may be described as "prehernial" or that which is passed through before any external appearance is discovered ; it is peculiar to this form of hernia, it cannot exist in the congenital form, for reasons which will be obvious, and it does not exist in the strangulated variety, unless this supervenes as an acute attack in the course of a chronic one; (2) the stage of growth, which lasts from the time of appearance to the period when the efficient cause ceases to act; and (3) the stage of rest, when the efficient cause is removed, and only subordinate or accessory causes remain in operation. In acute hernia there is but one stage terminated by operation, unless reprehensible delay is permitted, when there are two—the stage of tension and the stage of gangrene. The abdomen, we know, is a closed chamber, whose walls are divisible for the purpose under consideration into three—the peritoneal, the muscular, and the cutaneous. The cutaneous may for practical purposes be ignored, since when once the other two have yielded it offers no serious resistance, and in the operation for radical cure it is of no moment, its yielding, distensible character rendering it useless. The contents of the abdomen fit it accurately, so that a diminution in its capacity means internal pressure upon its walls in every direction. Of the two coats, muscular and peritoneal, both elastic, the muscular is far less dilatable than the peritoneal; the latter is complete, the former is not.

There exist in the former, the outer coat, certain portions not so firmly constructed as the remainder, but yet, under ordinary circumstances, quite equal to giving the necessary support. When, however, the abdomen contracts, the increased tension brought to bear upon that portion of the serous lining membrane which covers those weaker parts, causes it to bulge slightly. If the tension is now relaxed the natural elasticity of the wall restores the serous membrane to its original position. Should the tension be repeated quickly enough, so that the original effect has not quite disappeared, the elasticity is slightly diminished, and the return is not quite so perfect, but a slight pouching remains, while the peritoneum around the part thrust outwards is slightly dragged upon and displaced towards it. Should this process be repeated steadily and for a sufficient length of time the inner wall becomes slowly pushed outwards, drawing with it more and more of the surrounding peritoneum to assist in forming a small cone, open inwards, projecting in the line of least resistance.[7] This is the first stage, usually ignored by the patient, but occasionally, as the following cases go to show, causing much discomfort, which is often apparently unexplainable until the later appearance of the hernia throws light upon it. At this time there is no external tumour, the process is too gradual to cause vomiting or constipation or any of the symptoms which mark acute hernia, and until this time there has been nothing sudden or unusual to fix the attention of a patient. The cause acts so gently and so readily becomes habitual that nothing is thought of it, and its potency for evil in this direction is ignored. The following cases illustrate this point, and similar ones may be found in sufficient number if looked for.

Case 1.—The case, which was that of a woman thirty-nine years of age, was communicated to me by my friend Dr. Cluff of Openshaw. She was suffering from a right inguinal hernia. When she was about twenty-seven years of age she nursed her mother, who was paralysed, for two years. During this time she felt aching pain in the inguinal region radiating over the abdomen. Nothing, however, could be detected by Dr. Cluff, who examined her several times, to account for it. One day, after the pain had lasted for several weeks and had become established, whilst lifting a bucket of water, a com-

[7] See preparation in the Museum of the Royal College of Surgeons of England, No. 2660.

paratively light weight, she felt something "give way" at the seat of the pain and discovered the rupture.

CASE 2.—This case was that of an athlete. The hernia was a right inguinal one. He had not taken part in running or jumping for twelve months when he came under observation, because about that time he suffered from influenza and had a distressing, hard, dry cough, which lasted for a month. He first noticed the hernia two months before he sought advice. He had no idea what caused it.

CASE 3.—This patient was a man seventy-four years of age. He had worked at a rubber factory for many years; he had often been "wet through," going and coming from work. During the winter he had suffered for many years from cough, it being so severe sometimes as to provoke vomiting; the cough was always hard, and little or no sputum was expectorated. He thought little about it, as many other men suffered from a cough, and it was always better in summer. While he was sitting smoking in his easy chair one night he coughed slightly and felt something give way. He found subsequently that he had a slight inguinal rupture. He had no idea what caused it.

In the report of the North of England Gynæcological Society for March, 1893, Dr. Rabagliati of Bradford reports two cases of commencing umbilical hernia, in which the symptoms were similar to those in Dr. Cluff's case, and in which a small opening was found on operation. That the inner wall is dislodged from the outer around the advancing cone and helps to form it is well shown in specimens in the Museum of the Royal College of Surgeons of England, Nos. 2609, 2612, and may indeed always be found more or less plainly in all specimens of chronic hernia. This slow dragging inwards of the parietal peritoneum is shown by the folds which have always been described as existing at the neck of the sac, but still more by what has not apparently attracted as much attention—viz., the fact that these folds radiate upwards and outwards over the interior of the abdominal wall for a very considerable distance. Specimens showing this are Nos. 2123, 2127, in St. Bartholomew's Hospital Museum, and Nos. 2609, 2612, in the Museum of the Royal College of Surgeons of England. Has the fact been appreciated at its full value that such folds only exist in an acquired reducible hernia, that they are never seen in a congenital or an acute hernia—that, indeed, if by nothing else, a chronic hernia

can always be recognised by their presence? Such a condition surely implies displacement—slight separation of the inner from the outer wall for a considerable extent of surface; such as, were it produced at once, would almost inevitably be associated with small hæmorrhages and with slight or greater tearing of the thin membrane, if not by consequent inflammation; but none of these results are ever seen. Surely, therefore, the condition must be produced by a gentle force acting continuously, or at frequent intervals, over a prolonged space of time. This is the first stage. The slowly forming and advancing cone has opened out the internal ring and is beginning to press like a wedge upon the tissues of the canal. It may even have opened out the canal itself for some distance before it is discovered. If now a sudden and more forcible contraction of the abdominal cavity than usual should take place, such as would be produced by sudden lifting, jumping, &c., the wedge-like cone may be forced between the fibres, which separate with an appreciable sensation and the somewhat sudden recognition of the hernia from without. This, however, is only an incident in the course of such a hernia, upon which the efficient cause has already been at work for some time; is only possible, in fact, when the first stage is over, and is by no means always present. I have, indeed, been greatly struck by the numerous cases I have found of men with large herniæ who had no idea as to how they became possessed of their unwelcome encumbrances. This is the commencement of the second stage. The efficient cause being still in action, the peritoneal wedge slowly dilates the tissues it has passed through and opens up those in front of it, proceeding always in the line of least resistance, until it reaches such a point that its own weight begins to tell, and gravity reinforces the antecedent force; but whilst accessory, and in the later portion of this stage rather a powerful accessory to the enlargement of the sac, weight is certainly not the only factor, as a specimen, No. 2486[52] in Guy's Hospital Museum, conclusively proves. The sac here has enlarged in two directions—one downwards in the usual line, and one forwards and inwards towards the pubis. Always what I have called the efficient force remains the dominant factor. Other specimens which go to prove the foregoing are in St. Bartholomew's Hospital Museum, No. 2083A, and the Museum of the Royal College of Surgeons of England, No. 2612.

It is also to be remembered that during this, the second, stage, the peritoneum, at first a thin, fine membrane, becomes

slowly hypertrophied, so that it is in some cases a quarter of an inch thick or more. This surely points to a constantly recurring irritation, not sufficient to cause inflammation, but enough to induce growth. Specimens showing this are Nos. 2081, 2082A, 2111, 2124, St. Bartholomew's Hospital Museum ; No. 2607, Museum of the Royal College of Surgeons of England ; and No. 2494[30] Guy's Hospital Museum. Should the efficient cause cease to act, a third stage is reached. The peritoneum now ceases to be protruded from the abdominal cavity and lies at rest in the passage it has formed. The folds in which the inner wall is disposed, lying quietly side by side, begin to unite, and over and between them a layer of lymph is thrown out, which forms a collar (St. Bartholomew's Hospital Museum, Nos. 2123, 2124 ; Royal College of Surgeons Museum, No. 2608). They also become united to the tissues without. Should the cause again return this collar may be forced away from the point in the abdominal wall to which it was united, and the process starting afresh becomes the fundus of a secondary sac, formed in its turn by peritoneum dragged from the interior and stretched and lengthened in the process. The formation of the collar and these latter processes are well shown in one of Hunter's specimens in the museum of the Royal College of Surgeons, No. 2610. His description is worth repetition. "We dissected," he says, "a man who had rupture of a particular kind, a sort of double rupture on the same side and in the same passage and in the same sac. It appeared to me as if produced at two different times—that the man had a small inguinal rupture for some time, the contents epiploon, and that the mouth of the sac had contracted a good deal, so that no return of the epiploon could be brought about. Whilst in this state a second or new cause took place and, instead of dilating the old sac by pushing into it more epiploon, pushed down the old sac, and a new elongation of the peritoneum followed. This last was by far the largest." As I suggest, the cause, bronchitis or other, which was cured for a time—long enough for the requisite changes to take place in the neck of the sac—returned later in the patient's life and was the more persistent, partly, doubtless, because he was now, by so much, an older man. A similar case is mentioned by South.[8] As specimens showing still further the way in which, by the enlargement of a hernial sac, the internal peritoneum is

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[8] South's Chelius, vol. ii., p. 4.

dragged upon, I would instance No. 2111 in the St. Bartholomew's Hospital Museum, showing the sigmoid flexure displaced downwards until it rests immediately above the internal orifice of the sac, and No. 2111B, from the same collection, in which the cæcum has in a similar manner been drawn to the edge of the neck of the sac. Is it not possible that Mr. Lockwood's prolapse of the mesentery, and the elongation of that membrane occasionally seen, may be produced in a similar manner? Such an examination of specimens of chronic hernia proves, I think, that it is impossible that the real efficient cause of chronic hernia can be a sudden one—such as a strain, overlifting, jumping, and the like; and therefore that the usual history given is not the true one, but that more efficient and more easily overlooked causes must exist.

The results of treatment should be kept distinct. In acute hernia the state of the bowel is of the first importance; in chronic hernia the state of the abdominal wall. In acute hernia operation is a matter of immediate necessity; in chronic hernia it is one of convenience. In acute hernia the risk to life is great; in chronic hernia it is almost *nil*. In acute hernia the vitality is already, before surgical interference, greatly lowered, generally to such a point that the expenditure of a few minutes more or less over an operation may make all the difference between life and death to the patient. In chronic hernia the time expended on the operation is of very secondary importance, so that every detail as to technique may be carefully attended to. An operation, therefore, on acute hernia must be carried out under the very worst conditions for obtaining a permanent result; whilst in chronic hernia the efficient cause may first be removed, leaving only its results to be dealt with, the most favourable period as regards the patient's health and surrounding conditions may be chosen, and the operation may be carefully carried out with the perfect attention to detail which is necessary to secure permanency in the results, without the dread of vital exhaustion inseparable from operations on acute hernia; and this is the more important from the standpoint of permanent results, inasmuch as the foundation of a relapse is often laid during the first week after operation, whilst the parts are still in a plastic condition, when, should the efficient cause be still acting, bulging of the soft, uniting tissue is unavoidable.

If the viscera protrude such a condition is due to: (1) the inordinate length of the mesentery; (2) the abnormal

attachment of the mesentery to the spine, or, as Mr. Lockwood calls it, "prolapse of the mesentery"[9] (these may be admitted, but they only refer to unusual cases, cases decidedly in the minority, and do not at all explain the great majority. Compare the statement in Mr. Lockwood's Hunterian Lectures—"the youngest subject in whom I have found this condition was thirty-one years of age, and the next youngest was forty-nine"—with the Truss Society's table, in which it is clearly shown that 75·44 per cent. of the whole number of herniæ occur before forty years of age, and 67·79 per cent. before thirty-five years of age; and also with reference to the first a further statement by the same authority:[10] "The length of the mesentery has been measured in twenty-one people with acquired sacs or herniæ, and whose ages ranged from thirty-one to eighty-five years. In none of them did the mesentery exceed the length which is ordinarily met with in people of their time of life. It is noteworthy that in as many as nine the mesentery should be below the average length of 7½ in." It is evident, therefore, that, making every allowance for the possibility of the occurrence of cases which admit of such explanations, the great majority of cases are untouched by them.

(3) Constitutional weakness of the walls and abnormal patency of the normal orifices; and (4) the effects of injuries, operations, sudden strains, as in lifting unusual weights, &c. Are these last two correct? If they are absolutely correct the chances of success in attempting the radical cure of reducible hernia are but small, since we have but poor weak tissues to work upon, and no surgeon can guarantee his patient against the common accidents of life. Practical surgeons will therefore turn their attention, as they have generally done in the past, to more profitable and satisfactory work. If they are not correct, may not our preconceived ideas on these points have influenced our practice, as well as our prognosis? The effects of previous operations on the abdominal wall may be allowed to stand over, inasmuch as such results may be avoided by better technique, and in any case the number of herniæ due to this cause is but small, and thus still the great bulk of reducible herniæ remains unexplained. Are reducible, or, as I prefer to call them, chronic, herniæ ever due to a sudden strain or over-exertion? Is it the fact that the reason why such strains produce hernia in one man

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[9] Brit. Med. Jour, 1889, vol. i., p. 1460.
[10] Ibid., p. 1400.

and have no effect on another is that the first is of poor, flabby, unhealthy physique, while the latter possesses normal tissues? Is this true? Because, if it is not, much of the present practice which is, consciously or not, founded upon such preconceptions will be open to reconsideration and probably to modification. I believe that this conception is not the correct one, and for the following reasons. 1. A careful study of pathological specimens of reducible hernia reveals none of the changes usually to be found in lesions of other parts of the body due to sudden causes. It reveals, rather, very definite and well-marked differences between herniæ which have been produced suddenly—i.e., strangulated or acute herniæ—and those now under consideration. The appearances actually seen are such as are only compatible with the action of a comparatively gentle but persistent and prolonged continuous or frequently intermitting force. 2. A superficial inquiry into the history of a reducible hernia is as a rule glibly met by a declaration of some injury; but more careful cross-examination will usually succeed in eliciting the existence of some condition antecedent to the injury credited with the mischief, a condition potent for evil, but usually overlooked or ignored by both patient and examiner. 3. Many persons suffering from hernia are men who have enjoyed continuous good health, are descended from healthy parents, are physically stronger than their fellows, and many have shown, by the fact that they have reached a ripe old age in spite of this drawback, that they are of good constitution.

My lists will, I think, prove the two latter propositions. At first I hoped to have obtained information from various works and factories showing the proportionate numbers of men affected who were engaged in different employments, but I have been disappointed. The British working man, as we know him (at least in the North) is, with some honourable exceptions, extremely suspicious and distrustful. He sees or thinks he sees behind any attempt of this kind to obtain reliable statistics a mean attempt on the part of his master or the directors of the company employing him to eliminate the weaker members of the trade; and, partly, no doubt, owing to what I believe are the false ideas current respecting hernia, which are the reflection of our own teaching, he considers it a confession of weakness, or worse, to admit the possession of such an ailment. The lists from these sources are therefore useless, as the information they give is too fragmentary; but by the courtesy of the Prison Commissioners

I have been able to examine the male prisoners in the gaols of Manchester, Preston, Liverpool and Knutsford. I have also been able to tabulate the male inmates of the Liverpool Workhouse. For the latter privilege I am indebted to Dr. Alexander and Dr. Haslett of Liverpool, who rendered me every assistance in their power. I am also indebted to Dr. Orchard of the Chorlton Workhouse for permission to examine patients in that institution. Examination of these cases brings out prominently certain very interesting facts, some of which may be pointed out.

1. A fair number (24 per cent.) gave the history of a strain or lifting a heavy weight without any hesitation at all, but on closer questioning it came out that in some cases the strain to which they attributed all their trouble had taken place a considerable time before the date on which they first discovered a swelling. Thus, in one case three or four weeks and in another eight or nine months elapsed between the accident blamed and the appearance of the hernia, whilst a third who found the hernia in 1872 went as far back as 1869 for its cause, and a fourth gave as the cause a fall from a scaffold twelve years before the first appearance of rupture.

2. A certain number could give no reason whatever, their minds being directed always to some sudden accident as the only possible cause for their condition, bnt on cross-examination one or the other of the causes I snggest as the efficient ones were usually fonnd to be present. One case was peculiarly instrnctive. This was a man sixty-six years of age, who was operated upon eight years previously. The patient said that the surgeon who operated upon him was particnlarly anxions to elicit the cause of the hernia before operation, but the man could not trace it to anything. The rupture "came of itself," he said. The operation was done bnt there was a relapse in eighteen months. Conld it be wondered at, when the man was evidently slowly dying from chronic bronchitis, from which he had snffered for more than forty years?

3. A certain nnmber attributed the rnptnre at once to cough. "Sure, 'twas dint of heavy coughin'," said one Irishman seventy-five years of age, but very few appeared to have any idea that their herniæ might be due to this.

4. Some accnsed the most unlikely things. One man in Strangeways Gaol believed it to be dne to masturbation,

another to the shock of having once drunk cold water, another to the pain of an injured hand &c.

5. Whilst occurring in men of poor physique and owning feeble parents, it was by no means limited to such. Some of those with large herniæ were strong, stalwart men, or had evidently been so at the time when the herniæ appeared, as the following three cases will show, whilst the ripe age to which they had attained and the family history elicited from them proved their right to rank among the best constitutions possible.

CASE 4.—A miner seventy-five years of age had had a right inguinal hernia for more than five years. He had been, besides pursuing his mining work, a mason, a navvy, and a brick-maker. His father (a farmer) died at forty years of age from the effects of a fall off his horse ; he had always been a strong man. His mother died when between fifty and sixty years of age. She had never been laid up for a single day in her life.

CASE 5.—A labourer seventy-four years of age had a right inguinal hernia of five years' and a left femoral hernia of eighteen months' standing ; he had suffered from bronchitic asthma for more than six years. His father died at seventy years of age. His mother was more than eighty years of age.

CASE 6.—This patient was seventy-two years of age, with a double inguinal hernia of twenty-five years' standing ; he contracted gonorrhœa when twenty-five years of age, with consequent stricture, besides numerous attacks of hæmorrhoids. He had done labourer's work for ten hours a day (from 6 A.M. to 6 P.M) easily for many years. His father died at eighty-four years of age from natural decay. His mother died at sixty years of age from fever.

6. A man 6 ft. 2 in. in height, well set up and an athlete, came to show a commencing right inguinal hernia, which he easily controlled by wearing a truss. After discussing the question of its causation [for at first, with the usual tendency to hunt for an accident, overstrain or unguarded act as a cause, he could give no reason why he, of all others, should be troubled in this way], he confessed that as a boy he had disliked going to the primitive construction which did duty for him in those days, and had for that

reason often gone as long as a week without a defæcation; that as he grew older he had suffered in consequence from intractable constipation with the usual straining at each effort, and that he had noticed, whilst straining, slight cracking sensations in the inguinal region; that these with the uneasy feeling they produced could always be arrested by lifting the right thigh so as to press it against the abdomen, and that now looking back he could easily understand that his old habits of procrastination of the fæcal act stood in the direct line of causation to his present hernia.

7. Whenever two or more herniæ occurred in one man, whilst an explanation was generally glibly forthcoming for the first, any inquiry into the history of the later ones was met by ignorance of any further cause. It appeared only natural that if the abdomen gave way at one point it should continue to do so at others.

8. Certain occupations which act in a similar way appear also to produce chronic hernia. Thus, one patient, a hawker, attributed his hernia, and, as I think, rightly, to the constant shouting required in his calling. Another case was a very interesting one. No reason whatever could be found in this man, who was at sixty-eight years of age a well-built, sturdy-looking fellow, with a soldierly bearing and a perfectly healthy history, until I elicited the fact that he had been in several regimental bands, where he had played on the bombardon, bassoon, tenor trombone, and the cornet.

In the latest book on this subject by Macready[11] lists are given of the occupations of the sufferers from hernia, and he remarks, contrary to the opinion of Kingdon,[12] "that the proportion of ruptured persons in a trade fairly corresponds with the severity of the toil," but he notices that the gardener, the hawker and the baker are very high on the list. "The gardener," he says, "takes a high place, because, perhaps, his position at the spade relaxes the structures of the groin at the moment of his most considerable effort. It has been noticed that the foresters in the Hartz Mountains suffered grievously from ruptures, and Stromeyer supposed that the stooping position, which they were obliged to adopt in cutting and binding wood, materially contributed to produce ruptures among them." As to this, one would naturally ask what particular strain is there in cutting and binding wood, and if there were, would not the very relaxation of the

[11] Macready on Ruptures, p. 51.
[12] Holmes' System of Surgery, third edition, vol. ii., p. 749.

part be the best possible preventive of any dangerous result. He goes on to say : "It is difficult to explain why the hawker is so high upon the list, unless it is that he is not only ill-fed, but he is compelled to strain when shouting to call attention to his wares. The baker, also. is more frequently ruptured than might be anticipated. He has often to lift heavy weights, and is especially subject to the ill-effects of an atmosphere impure with gas, moisture and dust, whilst he is one who makes the night joint labourer with the day." Naturally, if one is imbued with the idea that undue strain combined with constitutional debility is the true cause of hernia, it becomes necessary to attempt to explain the relatively high position of bakers, gardeners, foresters, and hawkers, but if it be conceded that the efficient cause is what I suggest it becomes immediately most natural. Foresters, gardeners, and hawkers are all exposed to extremes of weather. Bronchitis, pneumonia, and asthma will be readily induced in them, whilst bakers live in a peculiarly irritating atmosphere, besides being at one time exposed to a high temperature and at another often to a very low one. If the list is examined with the former notion, it is still more difficult to explain why the gardener should rank higher than the blacksmith, or the cellarman than the mason ; but viewed in the latter way each trade falls naturally into its position, from the gasworks service at the top to the clerk and tobacconist at the bottom.

In discussing the question of the constitution of herniated persons we are handicapped by the fact that there exists no definite standard to which we can appeal as proving that a man has a normal muscular condition or that his constitution cannot be considered to be debilitated ; but some assistance may be obtained from certain statistics. The tables furnished by the Truss Society when compared with the Registrar-General's report show that hernia apparently does not shorten life, inasmuch as, whilst 75·44 per cent. occur before forty years of age and 67·79 per cent. before thirty-five years of age, deaths from hernia occur in the proportion of 93·15 per cent. after thirty-five years of age, and at seventy-five years of age there are as many as at forty-five years of age, and at eighty-five years of age, and upwards, there are nearly as many as at twenty-five years of age. Here, again, the conclusions are falsified by the universal custom of grouping all herniæ together as varieties of the same malady. Were chronic herniæ quoted separately the contrast would be still more striking. I cannot help also emphasising the fact once more,

which is clearly shown by the above figures, that so large a proportion of men with herniæ live to a good old age, outliving their fellows, although burdened with this disability, goes to prove that taken collectively they are rather men of better material than ordinary. Further to accentuate this, I have contrasted the deaths from hernia and those from scrofula. Of course, scrofula does not coincide with the relaxed muscular condition ascribed to herniated patients, but it is the nearest condition tabulated in the Registrar-General's returns, and I instance it simply as exemplifying the fact that persons of a poor type of physique show a typical death-rate in absolute contrast to that of hernia. It will be seen that, putting all herniæ on one side occurring before five years of age as almost certainly congenital, there is a progressive rise through small figures up to sixty-five years of age, whilst in scrofula there is an almost unbroken decrease from the commencement onwards. Compare, on the other hand, the deaths from hernia with those from bronchitis, emphysema, and asthma, and the types of each will be seen to be almost identical.

The next table gives confirmatory evidence. Men entering the army may be considered to be picked men, as any who show the presence of deformity or debility either at the time of enlistment or within three months after are rejected, and I understand that the standard required for cavalry men is distinctly higher than that for infantry. Yet by the reports of the Surgeon-General for the years 1868–71 inclusive—the latest I can obtain giving this particular information—cavalry and artillery show larger percentages of sufferers from hernia than infantry. If the Household troops are omitted, as I think they fairly may be, the percentage is still higher, being for cavalry and artillery, 3·05; for infantry, 1·78. What is the explanation? I suggest that it is due to the multitudinous concussions to which the abdominal cavities of artillerymen and cavalrymen are subjected—the latter by the English military fashion of riding and the former by the bumping over uneven ground with their springless gun-carriages.

Without doubt in any attempt at radical cure of chronic hernia the choice of the operation best suited to the particular case is a matter of the utmost importance; but even the best planned operative measure may end in failure or relapse, which is much the same thing, if the cause which originally produced the rupture is still in action. To be certain of its previous removal it is obviously necessary

above everything else that there should be no doubt as to its identity. To assist in determining this is the aim of this paper, and the conclusions which appear to me justifiable are: (1) that chronic and acute herniæ are absolutely different things, agreeing only in the fact that they are both protrusions of viscera through their normal environments; (2) that they differ in etiology, pathology, and course; (3) that, especially from the point of view of radical cure, it is important to distinguish between them; (4) that in discussing the feasibility of operations for radical cure, and especially the permanency of their results, the etiology of chronic hernia is of immense importance, since an operation for the cure of the results of a cause is almost certain to be useless whilst the cause remains in operation, and if the cause can be found the patient may be warned to avoid it after the operation has been performed, in order that permanency may be rendered more probable; (5) that in the case of chronic hernia the cause is never one acting suddenly and singly, as overlifting, strains, falls, &c., but always one acting slowly, persistently, gently, habitually (such causes are difficulties in urination and defæcation, certain occupations, and chiefly and most prominently coughing in all its forms); and (6) that the claims of any operation for the radical cure of chronic hernia cannot at present be properly estimated, and that they never can be unless acute and chronic herniæ are absolutely separated and the true effective causes of them are duly appreciated, these causes being previously carefully eliminated.

St. Ann's-square, Manchester.

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TABLE I.—COMPARISON BETWEEN DATES OF DEATHS FROM HERNIA AND FROM SCROFULA.
Registrar-General's Report, 1891.

—	Under 1 year.	1 to 5	5 to	10 to	15 to	20 to	25 to	35 to	45 to	55 to	65 to	75 to	85
Hernia	73	11	1	2	9	14	41	109	187	276	342	164	30
Scrofula	1516	1525	542	429	397	337	407	311	212	146	67	22	—

	Before thirty-five years of age.	After thirty-five years of age.
Hernia	5·53 per cent.	94·46 per cent.
Scrofula	73·58 ,,	26·41 ,,

TABLE II.—COMPARISON BETWEEN DATES OF DEATHS FROM HERNIA, AND FROM BRONCHITIS, EMPHYSEMA, AND ASTHMA.
Registrar-General's Report, 1891.

—	Under 1 year.	1 to 5	5 to	10 to	15 to	20 to	25 to	35 to	45 to	55 to	65 to	75 to	85
Hernia..	73	11	1	2	9	14	41	109	187	273	342	164	30
Emphysema and Asthma	10	16	14	6	12	22	102	237	491	863	913	333	35
Bronchitis	19,594	11,331	572	117	147	179	766	1985	4918	9872	14,124	9768	1996

	Before thirty-five years of age.	After thirty-five years of age.
Hernia	5·53 per cent.	94·46 per cent.
Emphysema and asthma..	5·15 ,,	94·85 ,,
Bronchitis	4·00 ,,	96·00 ,,

TABLE III.—SHOWING NUMBERS SUFFERING FROM HERNIA IN THE ARMY DURING THE FOUR YEARS 1868 to 1871 IN EACH ARM OF THE SERVICE, WITH ACTUAL STRENGTHS AND PERCENTAGE.

—	1868.			1869.			1870.			1871.			Total. percentage.
	Total strength.	No.	Percentage.	Total strength.	No.	Percentage.	Total strength.	No.	Percentage.	Total strength.	No.	Percentage.	
Household Cavalry	1,212	—	0·8	1,216	1	0 8	1,208	0	0 0	1,204	—	0 0	
Cavalry	8,281	22	2·6	7,923	17	2·1	7,905	22	2·7	10,462	17	1·6	2.5
Artillery	9,565	25	2 6	7,912	14	1·7	9,674	26	2·6	12,123	52	4·2	
Foot Guards	5,678	3	—	5,642	2	—	5,674	4	—	6,222	5	0·8	
Infantry	25,208	41	1·0	31,541	43	1·3	33,623	72	2·1	47,420	91	1·9	1·8
Depôt Battalions	14,166	41	2·8	10,666	31	2·9	8,362	24	2·6	7,431	20	2·6	

CASES.

STRANGEWAYS PRISON, MANCHESTER.

No.	Kind of Hernia.	Present Age.	Duration of Hernia.	Trade.	Assigned Cause.	History of Efficient Cause.	Remarks, Family History, &c.
1	Right scrotal	50	18 yrs	Labourer	Lifting fifty-six's	Passage of uric acid for many years	
2	Left inguinal	32	3 mos	Labourer	Lifting weights	Piles three or four years	
3	Sml. rt. femoral	35	5 yrs	Puddler	No idea	Bronchitis for six or seven years	
4	Right inguinal	64	17 yrs	Stoker	Lifting stone	Gonorrhœa 25 years ago; sequent stricture	
5	Right inguinal	24	1 yr	Fireman	Jumping	Has had severe cough for some years	
6	Right scrotal	40	7 yrs	Barman	Lifting hogsheads	Winter cough and stricture ten years	
7	Right scrotal	32	4 yrs	Turner (metal)	Lifting cylinder end	Gonorrhœa 7 years; sequent stricture	
8	Right inguinal	38	11 yrs	Driver	Lifting cart	Bad bronchitis 12 years since	
9	Right inguinal	42	8 yrs	Maker up	Coughing and vomiting		
10	Right scrotal	38	8 yrs	Pitman	No idea	Cough for many years	
11	Right scrotal	24	2 yrs	Hawker	Fall down stairs	Three years' cough	
12	Right scrotal	25	3 yrs	Labourer	Lifting 1 cwt.	Piles for last 6 years	
13	Right inguinal	56	8 yrs	Bookseller	Slipped down a step	Chronic diarrhœa, with occasional passage of blood, for more than 8 years with intermissions	
14	Large rt. scrotal	40	9 yrs	Labourer	Carrying calico	Old asthma for many years	
15	Right inguinal	60	10 yrs	Tailor	No idea	Old stricture	Had some pain in the back for 1 year before appearance of stricture; easier after stricture became apparent
16	Right scrotal	45	2 yrs	Smith	Lifting hammer or kick from horse	Severe piles 17 years ago; more or less since	
17	Diaphragmatic	42	2 yrs	Hairdresser	Carrying hemp	Three years ago had bronchitis for six weeks; used to drink and vomit in consequence (Gastric catarrh?)	
18	Right scrotal	28	5 yrs	Porter	Running	Gastric catarrh	

LIVERPOOL WORKHOUSE.

No.	Kind of Hernia	Present Age.	Duration of Hernia.	Trade.	Assigned Cause.	History of Efficient Cause.	Remarks, Family History, &c.
19	Left scrotal Right inguinal	67	37 yrs	Sailor	Holding ship's wheel	Piles for 40 years	
20	Left scrotal	68	8 yrs	Dock labourer	Lifting case of machinery	Piles: does not know how long	
21	Left inguinal	65	3 yrs	Labourer	Due to poisoned wound of hand	Gonorrhœa 30 years ago; severe cough 4 years ago	
22	Right inguinal	69	10 yrs	Dock labourer	Lifting bales	Piles 12 years; gonorrhœa 49 years ago; slight stricture and enlarged prostrate	
23	Double scrotal	63	26 yrs	Sailor	Came very gradually. Believes it must have been due to lifting, but does not remember any specific act	Gonorrhœa and buboleft side 26 years ago	
24	Right femoral	66	12 yrs	Dock labourer	No idea of cause	Old standing hard cough	
25	Double scrotal	75	30 yrs	Irish Constab.	Kick by man on right side	Gastric catarrh from whiskey drinking; now suffers from asthma	
26	Right inguinal	68	3 yrs	Weaver	Believes it was due to lifting warps, but is not sure	Was in 7th Fusiliers, 2nd 4th Regiment for 13½ years, then in a band in Burnley, also in militia band since leaving army. Played bombardon, bassoon, tenor trombone	Father died 67; believes it was heart disease. Never knew him to be off work from illness. Mother 66; does not know cause
27	Right scrotal	65	20 yrs	Stableman	Crushed by wheel against wall	Difficult urination for many years	
28	Large rt. scrotal	62	2 yrs	Dock labourer	Lifting a bale	Difficult urination and bronchitis	
29	Left inguinal	53	14 wks	Labourer	Lifting hay	Piles	
30	Right inguinal	56	20 yrs	Coachman	No idea		
31	Large rt. scrotal	73	9 yrs	Dock labourer	No idea, unless due generally to heavy work	Stricture after gonorrhœa for 20 years	
32	Right inguinal	74	41 yrs	Sailor	Wrecked and struck against a rock	Gastric catarrh from drink at times	
33	Left inguinal	70	35 yrs	Sailor	Must have strained himself reefing topsails, but does not remember when	Old standing cough	
34	Right inguinal	46	14 yrs	Labourer	Came whilst walking home from dock	Gastric catarrh from drink	
35	Right scrotal	52	20 yrs	Fireman on steamer	Firing up	Severe piles 20 years ago	
36	Right inguinal	50	20 yrs	Sailor	Drank cold water and the shock brought it on	Dysentery for many years intermittently	
37	Right inguinal	75	5 yrs	Miner	Dint of heavy coughing		Has worked in mines 30 years. Has been mason, navvy on railway, brickmaker
38	Right femoral	55	7 yrs	Hairdresser	Was lathering man for shaving. Attacked by sudden cramp in stomach. Discovered hernia	Has had severe paroxysmal cough for full 20 years	Father died at 40, fall off a horse. Had always been strong Mother between 50 and 60; had never lain in bed for a day before she died
39	Left inguinal	72	37 yrs	Joiner, acrobat, &c.	Fell from rope. Some weeks after found a swelling. Has fallen six times	Bronchitis. Gonorrhœa and stricture ever since he came home from the "Rooshian" War in 1833 or 4	Operated on for piles ten years ago. Was out of bed in 6 or 7 days
40	Double scrotal	67	43 yrs		Lifting 3 56lbs weights	Is very deaf. Says it came very gradually, but he did not notice it until it came rather rapidly after lifting this weight	
41	Left inguinal Left femoral	74	5 yrs 18 mos	Sailor	Fall down a ladder Inguinal hernia appeared 8 or 9 mos after. No cause for femoral	Bronchitic asthma over 6 years, having to get up at night for breath	Father died 70. Hernia pained him for 3-4 months before any external sign. Mother died near 80.
42	Left inguinal	56	5-6 mos	Working in shipyard	Twitch of a crowbar. Hernia appeared 3-4 wks after	Piles one year ago; some difficulty in urination	Has to get up at night frequently to pass urine, only comes in small quantities
43	Right inguinal	43	20 yrs	Labourer	No idea	Gonorrhœa 23 years ago; followed by stricture	Noticed that hernia came gradually
44	Right scrotal	52	25 yrs	Hawker	Shouting, over using voice	Bronchitis certainly more than 40 years	Operated on for radical cure 8 years ago; relapsed in 18 mos
45	Right femoral	66	30 yrs	House painter	No idea	Has had cough for seven years	Father died at 64. Mother 66 (fever).
46	Left inguinal	38	7 mos	Dock labourer	Heavy stress in coughing	Gonorrhœa at 25; dysuria and dribbling of urine for many years. Often troubled with piles	Has always easily done 12 hours' work daily.
47	Double inguinal	72	47 yrs	Stoker on ship	Believes it was a slip down the iron ladder leading to stoke-hole		
48	Left inguinal	90	6 yrs	Plumber and painter	Working too hard	Has had piles. Is deaf, and too old to get any connected account from	
49	Right scrotal	63	1 yr	Dock labourer	Thinks it was whilst lifting grain, but can give no definite time	Cough for some years, sometimes very severe. Piles 3 or 4 years since	
50	Right inguinal	62	3 yrs	Wardsman	Thinks it was caused by lifting men in and out of bed	Slight attack of piles 13 years ago. Hard cough, which ends in vomiting, for many years	
51	Double scrotal	70	6 yrs	Labourer	Scaffold fell under him 17 or 18 years ago. Did not see any swelling for 10-12 years after	Chronic bronchitis 10-12 years	
52	Left inguinal	74	21 yrs	Quarryman	Buried under a fall of stone. This occurred in 1869. Noticed lump first in 1872		

PRESTON JAIL.

No.	Kind of Hernia	Present Age.	Duration of Hernia.	Trade.	Assigned Cause.	History of Efficient Cause.	Remarks. Family History, &c.
53	Right scrotal	56	5 yrs	Piercer	Straining in the mill	Difficulty in urination and bronchitis for five years	
54	Complete right loguinal	28	7 yrs	Spinner	No cause known	May have been congenital	Father suffered in same way
55	Ventral	45	18 mos	Labourer in foundry	No cause	Bronchitis for many years. Had severe attack of piles 8-9 yrs ago	
56	Left scrotal	21	10 yrs	Cotton weaver	Believes it is due to masturbation	Slight stricture	
57	Right inguinal	17	15 yrs	Spinner	Tumbling off a fence	Congenital	
58	Right scrotal	40	8 yrs	Weaver	"Came of itself"	Long-standing stricture	
59	Right inguinal	34	8-9mos	Joiner	No idea	Gonorrhœa 11 years ago. Sequent stricture	
60	Right inguinal	61	15-20yrs	Joiner	Thinks it came through "weakness"	Several attacks of piles dating back twenty years	
61	Left scrotal	27	4 yrs	Labourer	It must have been done by lifting, but he remembers no special act	Cannot discover cause	
62	Right scrotal	58	12 mos	Navvy	Developed severe cough through working in the wet		
63	Left inguinal	47	15 mos	Warder	Has never done any lifting. Noticed it first when leaning against dispensing counter in the prison surgery	Gonorrhœa 32 years. 2nd attack 15 yrs. ago. Stricture for 30 years	

KNUTSFORD JAIL.

No.	Kind of Hernia.	Present Age.	Duration of Hernia.	Trade.	Assigned Cause.	History of Efficient Cause.	Remarks, Family History, &c.
64	Left inguinal	38	3 yre	Labourer	Lifting for a wager	Tight phimosis. Gonorrhœa at 20. Difficult urination ever since. Bronchitis and influenza twice	
65	Double inguinal	36		Labourer			
	Left		12 yre		Winding a crane	Gonorrhœa at 18; constant trouble with urination ever since	Father died 63; was ruptured
	Right		No date		No cause		Mother died 60; apoplexy
66	Double inguinal	59		Stoker			
	Left		6 yrs		Lifting manhole lid	No efficient cause found	
	Right		4-5 yrs		No cause		
67	Right inguinal	28	18 yrs	Blacksmith	Lifting heavy hammer Remembers no definite occasion, but discovered it during first three years of apprenticeship	Whooping cough when about 8 years old	
68	Right scrotal	62	6-7 yrs	Dock labourer	Expects it was due to lifting heavy blocks of timber, but "is sure he doesn't know"	Gonorrhœa three or four times, with difficult urination ever since	
69	Left ventral	61	10 yrs	Labourer	Working in docks; remembers no special act	Large prostrate. Has had difficulty in defaecation for over 10 years	
70	Left inguinal	52	7-8 yrs	Bricklayer	Fall from building 6 stories high	Constipation and consequent straining since childhood	
71	Right inguinal	29	No date	Clerk in P.O.	His mother says it was due to severe and persistent crying in childhood		
72	Right scrotal	53	8 yrs	Solicitor's clerk	Severe and persistent cough		

CHORLTON UNION.

No.	Kind of Hernia.	Present Age.	Duration of Hernia.	Trade.	Assigned Cause.	History of Efficient Cause.	Remarks. Family History, &c.
73	Right inguinal	58	5 yrs	Carder in cotton mill	Either lifting machinery or persistent coughing. Remembers no definite occasion	Has had bronchitis 6 or 7 years, due, his doctor tells him, to his dusty work	
74	Double inguinal	55		Labourer			
	Right scrotal		7 yrs		Fell across rails	Bronchitis 18-19 years; was once very severe	Father died at 78
	Left inguinal		No date		No cause		Mother died at 73
75	Right inguinal	54	12-14 yrs	Hawker	No idea of cause	A great deal of shouting in his trade. Has suffered much for many years from flatulence, producing much belching and heaving, due (he thinks) to irregular meal-times	
76	Right inguinal	77	6 yre	Dyer	Thinks it must be due to lifting, but "it was no special lift as did it"	Bronchitis for 7 years. Frequent micturition for 5 years. Rising 4-5 times a night (enlarged prostrate?)	Father died at 54; apoplexy Mother died at 50; asthma
77	Right inguinal	66	3-4 yre	Cabinet maker	Either lifting tables or general hard work	Dates 13 years ago. Habitual morning and evening cough. Gonorrhœa 4 years ago	Father died at 72. [illegible] at 50 3 brothers and 3 sisters living and well. Came to workhouse through ruin brought upon him by son-in-law. Is looking forward to starting afresh in life, and looks capable of doing so
78	Right inguinal	58	10 yrs	Labourer	Fell off a building. Noticed nothing for some months, until, when lifting a piece of timber, he felt something crack, and discovered hernia	Has been in the army 16 years. Has had gonorrhœa twice. Stricture 16 years	
79	Left femoral	78	14 yrs	Blacksmith	Lifting bar of iron	Winter cough for many years	
80	Right scrotal	67	2 yre	Joiner	Lifting bar of iron	Has to rise three or four times a night to urinate. Does not pass much until he finally gets up, when he passes half a chamber full. This has been going on for more than 12 months	Father died at 60 odd Mother died at 64: was the first patient operated on for Ovarian tumor by Dr. Clay. Died of asthma Grandmother was 97 when she died
81	Right inguinal	67	15 yrs	Velvet dyer	Must have been some strain, but does not remember it	Old standing cough, produced by standing in hot steam for several hours, and then going into cold air	
82	Right scrotal	70	2 yrs	Stonemason's labourer	Fell over flag-stone	Severe cough, lasting for 18 months, about 4 years ago	
	Umbilical		No date		No cause		
83	Double scrotal	67		Labourer			
	Left		2 yrs	Wardsman	Lifting frame end with another man: this other let go; frame fell on abdomen	Twenty years ago had ulcer at end of penis. Has had difficulty in urination for 15 years; urine now dribbles. Has to rise 3-4 times a night. Bronchitis for last 2½ years	Father died at 90; old age and bronchitis Mother died at 70; cause not known
	Right		3-4 mos		Came by cleaning floors		
84	Double inguinal	70	1 yr	Stableman	"Done it from coughing"	Cough. Difficult urination for many years. Rises 3 or 4 times a night, and then only passes a "thimble-full"	Father died at 60; mother died at 86; 1 sister living and well 68; 4 other children died young: does not know cause of death
85	Right inguinal	73	4-5 yrs	Shoemaker	Fell down stairs at night, found rupture fortnight after	Stricture 8-9 years; was dilated at R. M. Infirmary	Mother 59: was out in India: thinks she suffered from climate Father 70; senile gangrene of foot. Says the Dr. told him "the Latin technical term was pot kangrong"
86	Right scrotal	69	20 yrs	Joiner	Did it with lifting; noticed nothing at the time, but found hernia a week or two after	Has had attacks of piles off and on for more than 20 years. So bad that he had to leave his work. Worst attack was a little more than 20 years ago, and then he lost a good deal of blood	Mother 79; father 46; sister living and well at 67: one other child died 6 years old: cause not known
87	Right inguinal	44	2 yrs	Horse-keeper	Fancies it was done some time when jumping a horse: remembers no specific time	Has had difficulty in defaecation for many years. Bronchitis for 3 years	
88	Left inguinal	72	4 yrs	Weaver	Coughing	Chronic bronchitis 5 years	Mother 65: morbus cordis Father 65; cause not known
89	Left scrotal	72	16 yre	Forgeman	Struck by a bar of iron across hypogastrium. Noticed swelling 2 years after	15 or 16 years ago had a sharp attack of piles, losing much blood. Ever since has had rectal prolapse	Father died at 84; paralysis Mother died at 83; died in sleep
	Right inguinal		Not known		No cause known for right		One sister alive and well
90	Double scrotal	73		Cotton operative			
	Right		53 yrs		Lifting 5 cwt. between himself and another man	Can get no further history. Man is ataxic	
	Left		12 mos		No cause except cold		
91	Right inguinal	71	20 yrs	Carter	Was stepping off ladder with a heavy truss of hay on his head; was not as low as he expected. Gave himself a "kench." Found rupture 3-4 years after	Can find no history	Hale, hearty-looking man: brags of never having had a doctor Father died 65 Mother died 76
92	Double inguinal	73		Dyer			
	Right		4 mos		Carrying heavy loads	Sharp attack of bronchitis 2 years ago, more or less since	
	Left		No date		No idea		
93	Left inguinal	73	18 yrs	Wood turner	Overlifting	Gonorrhœa at 40 years	
94	Right scrotal	71	20 yrs	Joiner	Fall in street in a sitting position	Passes urine 3-4 times a night	Is markedly ataxic
95	Ventral above and to left of Umbilicus	76	7-8 yrs	Foundry man	Over-reaching at a crane, did not notice lump until a year or two after	Asthma 20 to 30 years	Father died at 90 odd Mother died at 90 odd Two sisters 74 and 72, as far as he knows, alive and well
96	Double inguinal	66		Lithographic printer			
	Left		45 yre		Remembers no sudden jerk, but believes it was due to working the handle of a lithographic press	No history	
	Right		12 yre				
97	Right inguinal	72	6-7mos		No idea	Difficulty in urination some years	Is aphasic, and it is most difficult, first to make him understand, and then to understand him
98	Left scrotal	43	4 yrs	Waiter	Thinks it was due to lifting	Has always had a weak chest, and has suffered from winter cough for more than 40 years. Had piles 4 years ago	